REMARKS

The present application includes claims 1-11 and 13-21. Claims 1-11 and 13-21 have been rejected by the Examiner.

Claims 1, 6-11, and 13-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Philips (U.S. Pat. No. 6,213,947) in view of Golland (U.S. Pat. App. Pub. No. 2004/0006271) and further in view of Bertora (U.S. Pat. App. Pub. No. 2005/0004459). Claims 2-5 and 17-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Philips (U.S. Pat. No. 6,213,947) in view of Golland (U.S. Pat. App. Pub. No. 2004/0006271) in further view of Bertora (U.S. Pat. App. Pub. No. 2005/0004459) and in further view of Stein (U.S. 2002/0100326).

By this response claims 1, 7 and 10 have been amended to incorporate the limitations of dependent claims 2, 3 and 5, claim 7, and claims 17, 18 and 19, respectively. Accordingly, claims 2, 3, 5, 8, 17, 18 and 19 have been cancelled. Claims 4, 20 and 21 have been amended to correct their dependencies in light of the cancelled claims and amended independent claims. The Applicant respectfully submits that the pending claims of the present application, as amended, are allowable over Philips in view of Golland and further in view of Bertora and further in view of Stein for at least the following reasons.

As discussed in the previous response, while Philips applies codes to transmitted ultrasound signals (Abstract; col. 3, line 51 – col. 4, line 10), the received signals in Philips are clearly beamformed (Fig. 1; col. 4, lines 29-31 and lines 53-56). Furthermore, both Phillips and Golland recite transducer arrays used to both send and receive rather than transmitting from a first transducer array and receiving echoes at a second single element transducer separate from

and independent of the transmitter array. See, e.g., Phillips at Figs. 1 and 21; col. 3, lines 38-50 and 59-62; and col. 4, lines 17-25; and Golland at Figs. 1 and 5 and pg. 4, para. [0045].

The Office Action acknowledges that the combination of Phillips and Golland do not teach the limitation of a single element transducer, separate from and independent of said transmitting transducer array, dedicated to said echo signals. The Office Action relies on the Bertora reference to address these limitations. However, the Applicant notes that while the Bertora reference does disclose the possibility of transmitter arrays and receiver arrays that may be separate or may be the same, Bertora discloses only **arrays** and not a single element transducer serving as a separate receiver. See, e.g., paragraphs [0039], [0041], [0042], and elements 101 to 801 of FIG. 7. Furthermore, the receiving transducer **array** of Bertora performs receive beamforming on the echo signals. See, e.g., paragraph [0049].

The Office Action states that an array of transducers may indeed be a single element transducer, and thus Bertora teaches a single element transducer. However, Bertora recites "a limited number of processing chanels, **which is smaller than the number of receiving electroacostic transducers.**" See, e.g., paragraph [0020], emphasis added. Thus, there must be at least one processing channel, and therefore there must always be more than one transducer, in order for the receiving channels to be smaller than the number of receiving transducers. Accordingly, the limitation of providing a "single element transducer" is not taught by Bertora. Rather, Bertora teaches away from using a single element transducer.

Furthermore, the claims of the present application as currently amended also recite the limitations of: 1) determining a position of a structure producing said encoded echo signal in response to an impact by said encoded ultrasound vector based on a time of transmission of said encoded ultrasound vector; 2) further determining the position based on a time of reception of

said encoded echo signal, and a strength of said encoded echo signal; and 3) **wherein said time of transmission is determined based on said code**. The Office Action acknowledges that the combination of Phillips, Golland and Bertora does not teach these limitations, and relies on the further combination of Stein for teaching these limitations. However, the portion of Stein relied upon by the Office Action states:

> Device 310 determines the location of the transducer using a conventional method of emitting an acoustic signal from an emitter positioned on the transducer; receiving the signal by three different receptors, each of which is located in a different predetermined location; measuring the travel time of the signal from the transducer to each receptor; calculating the distance from each receptor to the transducer, based on the predetermined travel time and acoustic velocity of the signal; and determining a three-axis coordinate location of the transducer based on the predetermined distance from each receptor to the transducer.

Stein does not teach where the time of transmission is determined **based on a code** as recited in claims 1 and 10 as presently amended, and as previously recited in dependent claims 5 and 19. In fact, Stein does not teach use of a code at all. Accordingly, Applicant submits that the pending independent claims 1 and 10 as amended are now in a condition for allowance, as well as dependent claims 4, 11-15, and 20-21

Furthermore, claim 7 has been amended to include the limitation that each echo signal is decoded using a code used to encode an ultrasound signal producing said echo signal. The previous Office Action does not point to references that address the limitations of claims 7-9, and the Applicant can find no support for the limitations in the cited references. Therefore, the Applicant submits that claims 7 and 9 are should be allowable over the cited art.

CONCLUSION

It is submitted that the present application is in condition for allowance and a Notice of Allowability is respectfully solicited. If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of GTC, Account No. 070845.

Respectfully submitted,

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